MIE346 – Design Assignment Details

Introduction

The design assignments in this course feature open-ended problems that require both conceptual design and detailed circuit analysis. Your solutions will need to combine multiple circuits, and later assignments will increasingly incorporate real-world parts and constraints.

Grading

Each design assignment will feature a series of questions, and the value of each question will be clearly indicated. Some assignments may give you a choice of two designs with similar questions. All designs will require some research and some conceptual thinking beyond typical tutorial or exam-type questions, as they are purposely selected to be open-ended in nature. Each assignment will be graded using the following list of priorities, in addition to a basic component of **professionalism** (see 'Submission Details'):

1. **Application of Course Knowledge** – All high-level design questions **can** be completed solely using circuits taught in class or found in the tutorial notes or later circuit fact sheets. For cases where real-world elements of the problem are featured, additional documents may be posted. Thus, the primary factor in all grading will be the application of knowledge you are expected to possess from the course alone.

2. **Research and Innovation** – Since these are non-trivial design problems, there is room in each problem for you to research solutions and/or to develop your own solution. In these cases, there should be a clear purpose for your research or innovation – a more efficient, more elegant, cheaper, or otherwise 'better' design should be the goal. We acknowledge that experience is critical in obtaining optimal results, so in this aspect you will be graded on effort over absolute result.

3. **Circuit Analysis** – Each assignment will contain a question or questions requiring you to perform detailed design – circuit analysis – using the techniques from class. This is different from prior courses (such as MIE243 for the mechanical engineers), where the project and exam questions stop at **conceptual** (high-level) design. For this course, you should treat the detailed design questions in much the same way you treat an exam question – show your workings and clearly highlight and explain results. We will mark them in the same way that exam questions are marked to give you some feedback on your techniques. Note that you are allowed to make use of PSPICE when it is helpful to you.

Submission Details

All question answers are due on the above date **online** through the submission link included with the assignment post. A penalty of 20% per day for late submissions will be assessed. Submissions are individual. Any material used in answering the questions **not** available on the course page must be clearly referenced. Please submit all answers as a **single file** (Word or PDF). You may omit any table of contents, introduction, etc. to save space; conciseness is appreciated. Be sure to include your name and student number on a **separate cover page**. The page limit for each assignment is **six pages**, not including appendices, diagrams, cover page, and mathematical calculations/derivations. It is strongly recommended to put large figures, circuit diagrams, etc. in an appendix to save space in the main body. You may also put non-critical text in an appendix, although please be aware it may not be read in detail like the main body (especially if it is long or not particularly relevant). All other formatting and style choices are left to your discretion. **Above all else in terms of formatting**, the final result should be **readable and professional**. You may lose significant marks for submitting **unprofessional** work, such as cellphone pictures of hand-written notes, unreadable diagrams or text, etc.